TRANSIT SUSTAINABILITY PROJECT

METROPOLITAN TRANSPORTATION COMMISSION

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Agenda

Transit Sustainability Project

PROJECT STEERING COMMITTEE
June 20, 2011
1-4pm
Lunch provided

Joseph P. Bort MetroCenter
Auditorium
101 Eighth Street
Oakland, California

1. **Introductions**

2. **Transit Competitiveness Index Tool – Analysis**

3. **Service Performance Metrics**
   a. **Discussion of performance metrics**
   b. **Application to existing system**

4. **Plan Bay Area Scenarios**
   a. **Background**
   b. **Initial Vision Scenario**
   c. **Alternatives Analysis**

5. **Public Comment/ Information/ Next Meeting**

   The July meeting of the Transit Sustainability Project Steering
   Committee will be rescheduled (previously scheduled for July 18th).
   MTC will be in touch with you regarding possible dates.

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Memorandum

TO: Transit Sustainability Project Steering Committee   DATE: June 14, 2011

FR: Deputy Executive Director, Policy

RE: June 20th Project Steering Committee Meeting

We look forward to seeing you at the Transit Sustainability Project (TSP) Steering Committee meeting on June 20th. I am forwarding to you material for the meeting.

The meeting on the 20th will include:
- a presentation introducing the Transit Competitiveness Index (TCI) (Attachment A);
- an overview of the service performance metrics framework including a high-level summary of existing service performance (Attachment B); and
- an update on Plan Bay Area (Attachment C).

At your March meeting, we reviewed the approach to the service analysis and identified the outcomes we are seeking. The service analysis has been underway for a number of months, working through the Service Technical Advisory Committee, and will be the focus of the meeting. The service component of the TSP has three layers of analysis: 1) system-wide, 2) regional services, and 3) subregional services.

System-wide, the analysis is focused on evaluating existing system performance through a set of consistent performance metrics. Acknowledging that there is a wide diversity in the land uses and service needs of the region, transit services are being differentiated by service type (e.g. regional all-day service, urban trunk, local network, community bus, etc.). The goal is to establish a consistent set of performance metrics for regular reporting that captures both service effectiveness (productivity) and service efficiency (cost effectiveness). These metrics can be used to evaluate system performance over time and inform investment decisions both at a local and regional level.

Regionally, the analysis includes the development of the Transit Competitiveness Index (TCI), which is a tool we intend to make available to transit agencies and regional partners. The TCI evaluates where transit is most competitive relative to market demand, land uses, and other policies such as parking pricing. It is a tool that can help inform service planning and transit agency resource allocation, assist in discussions with local jurisdictions regarding how to provide transit-supportive policies, and provide a visual tool for public outreach. Additionally, the regional analysis will include the development of service concepts for major regional corridors, including TransBay and Express bus corridors, as well as analysis of ADA-paratransit focused on best practices and innovative approaches to service delivery and cost containment.

At a more local, sub-regional level, we are or will be conducting more detailed analysis in two areas: the Inner East Bay and the Peninsula. The Inner East Bay work is underway, focusing on BART and AC Transit, and is a collaborative effort with transit agency staff actively engaged to analyze transit service in the Inner East Bay. It will result in a comprehensive service and market review of AC Transit and associated BART service, and will develop service planning concepts that examine coordination opportunities between the two systems, identify gaps and/or duplication in terms of service coverage, and identify resource requirements for service improvements.

On the Peninsula, VTA and SFMTA recently completed comprehensive evaluations of their respective service areas, and SamTrans is currently undertaking a similar effort. The TSP effort will focus on trips between service areas, connections with Caltrain, and implementation of recommendations from previous efforts. We will work with transit agency staff to identify priority areas for analysis later this summer.

We look forward to the discussion at your meeting on June 20th.

Ann Flemer

Memorandum

TO: TSP Project Steering Committee (PSC)

FROM: Christopher Wornum, Cambridge Systematics, Inc.,

DATE: June 13, 2011

RE: Transit Competitiveness Index (TCI) Overview

This memorandum provides an introduction to the purpose of the Transit Competitiveness Index (TCI) Tool and possible applications for the Transit Sustainability Project (TSP), in advance of a more detailed discussion at your meeting on June 20th. For the presentation of the TCI tool, the consultant team plans to cover three main topics:

- An explanation of the TCI methodology, including the difference between a competitive and uncompetitive TCI score and a discussion of the sorts of questions that the TCI tool can and cannot address.

- Preliminary summary results for the entire nine-county region.

- Presentation of several example analyses, to give PSC members a sense of how the tool can be used.

We look forward to a lively discussion about the Transit Competitiveness Index, and market factors in general.

Background

For the past ten years, about half a dozen transit agencies around the country have focused on understanding what makes a travel market competitive for transit, how to measure this competitiveness and apply that knowledge to make transit more productive and sustainable. The traditional measures depend on the land use density and household characteristics (i.e., transit dependent vs. "choice" riders). While these market conditions have significant influence on the productivity of transit, they are far from the whole story and their relative contributions to competitiveness remained poorly understood. Furthermore, the traditional approach leaves out some of the most effective actions that regions and local jurisdictions can take to improve transit competitiveness and market share: parking supply and price, transit priority treatments and pedestrian environment.   The TCI provides decision makers, local officials, and neighborhoods a tool to show what is needed to deliver productive, effective transit service.

The TCI tool rates each travel market in a region or transit service territory for its competitiveness as a transit market and provides a web-based, graphically-oriented tool to display and access the information. This measure of competitiveness has <u>nothing</u> to do with the

kind of transit service provided in the market, either currently or in the future. In other words, the competitiveness of a travel market will not change no matter how good or bad the transit service may be. Thus, the TCI measures the conditions that determine the potential ridership a transit agency can expect to attract regardless of how well it currently serves a market.

The TCI is a composite metric that will provide a single score of the transit market conditions and opportunities. But the composite TCI can be deconstructed to determine how much each of the underlying conditions contributes to a travel market's competitiveness and these results can be displayed in maps, charts, or tables. For example, the maps can show whether transit stations and stops are currently located in competitive markets.

Possible Applications

The practical application of this knowledge is embedded in GIS-based software known as the Transit Competitiveness Index (TCI) tool. The data and information within the TCI are from the MTC regional travel demand model, the census, land use databases, ridership surveys and other existing sources. Transit and regional planning agencies who have worked with TCI tools have used the results to address three objectives:

- **Allocation of resources within a transit agency:** the TCI indicates where a transit agency should prioritize its limited resources for transit capital and operations improvements in both the very short term and long-term to achieve the most cost-effective, productive results either for existing or future conditions.

- **Partnership with local jurisdictions and communities:** the TCI demonstrates in quantitative terms what neighborhoods and cities can do to improve the competitive environment for transit. The TCI tool, for example, would show elected officials, residents or business owners if current conditions are sufficiently competitive and how changes to those conditions (e.g., residential and/or commercial density, parking prices, transit priority treatments, etc.) or some combination of these would improve competitiveness. Such information can present clear choices for neighborhood activists, businesses, and elected officials.

- **Public outreach and confidence building:** The TCI results may be shown to an electorate or community activists to explain where transit service is most likely to be successful. It can demonstrate how specific changes to parking costs, density and transit priority treatments can make an area more competitive. Ultimately, the practice of focusing transit service in competitive markets could influences voter's willingness to support additional funding.

TCI Deployment to Date

MTC will be the eighth organization to use the TCI tool. The following six transit agencies and one Metropolitan Planning Organizations have a first or second generation TCI:

- **Santa Clara Valley Transportation Authority (VTA):** The VTA used the TCI for its recent Comprehensive Operations Analysis (COA). The application identified a core market for improved bus services and located areas outside this core area where services should be reduced. It was then used to develop refinements to individual routes and corridors. The TCI was also used to assess the relative transit competitiveness of different types of activity

centers (e.g., downtowns, universities, medical centers, shopping centers, etc.). The resulting restructured VTA bus service plan was implemented in 2008. VTA also used the TCI to evaluate restructuring its LRT and has since implemented some service changes and early results indicate improved ridership and reduced costs.

- **San Francisco Municipal Transportation Agency (SFMTA) Transit Effectiveness Project (TEP)**. The TCI was used to identify competitive locations where levels of bus service could be improved, and to identify transit uncompetitive locations where bus services could be pared back. The TCI also provided guidance on what underlying factors caused markets to be competitive or uncompetitive. The recommended bus service modifications were adopted in 2008.

- **Bay Area Rapid Transit District (BART) Regional Rail Analysis**. BART has applied the TCI to evaluate specific travel markets that have untapped ridership potential. BART has identified a possible Metro Core market where it could implement more frequent and longer duration service. BART will be proceeding with a more detailed analysis using the TCI over the next year.

- **Puget Sound Regional Council (PSRC) Transit Market Analysis**. PSRC has been using the desk-top version of the TCI to evaluate all transit corridors in the region and provides the tool to the five transit operators. Microsoft was the earliest user of the TCI when it analyzed a potential new shuttle system for its employees accessing its headquarters in Redmond, Washington.

- **Pace South Cook County-Will County Service Restructuring Initiative**. For Pace (suburban Chicago), the TCI is used to identify transit competitive travel markets in its South Cook-Will County service area and to develop transit service strategies with the best potential for improving ridership. The tool is now being used to develop BRT services throughout its service area.

- **San Joaquin Valley Express Transit Study**. For this study, the TCI was used to evaluate the potential for increased intra-county express buses serving the San Joaquin Valley. The TCI was used to eliminate several markets from consideration, and identify markets where added express bus services might be possible. Using this information, three corridors for further analysis were identified.

- **Capital Metro (Austin Texas)**: The TCI was used to analyze the relative transit competitiveness of selected corridors and activity centers to support a systemwide service restructuring initiative.

Recent TCI Enhancements for MTC TSP

MTC is receiving a 3rd generation TCI tool that will cover all nine Bay Area counties. The current second generation methodology measures competitive conditions either as they are today or as they are expected to be under a static base case future forecast. This new methodology will add the following capabilities:

- **Evaluation capabilities for user-defined changes to existing and future conditions.** This policy analysis helps local jurisdictions, community groups and neighborhood stakeholders understand effects of changing <u>specific</u> market conditions in order to improve the competitiveness of transit in specific locations or travel markets. A user can test changes to land use density, transit priority treatments, parking prices, and changes in congestion. This methodology supports the notion that transit can both define and respond to market conditions under a "livable cities" approach, which addresses both the attraction of good transit and the push of sustainable mobility policies.

- **Web-based access from any computer for any Bay Area Agency**. The tool will be available as a web-based application for agencies to utilize.

- **Access to and display of critical supporting information:** The tool will allow users to evaluate each travel market's share of low income households, and auto availability and Title VI populations. In addition a user can display:

  - **Transit networks:** This will include stop locations and each route's service characteristics (e.g., headways, vehicle types, duration of service, stop amenities, and other service characteristics).

  - **Boardings and alightings at each transit stop (i.e. stop loadings)**: This data helps to validate the TCI scores and this reveals where transit service may be deficient for a competitive market.

  - **Travel volume data**: This will be provided for any origin-destination pair and may be displayed as desire lines, possibly with ancillary information on trip purpose and mode share or ridership.

CAMBRIDGE
SYSTEMATICS

Transit Sustainability Project
Service Analysis

Performance Metrics Analysis
June 20, 2011

Development of Performance Metrics

Investment

Service Units

Return

Ridership (Mobility & Environmental)

Revenue (Financial)

Pathways to Success

Lower unit costs
Operator wages, overhead, work rules

Prioritize service allocation
Distribution of service to more productive areas of the system

Improve operating efficiency
Service design, speed, scheduling

Adjust pricing to increase revenue
Fare policy (value dependent)

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Farebox Recovery

Composite indicator includes all the main components of success

Calculation:

Numerator: Ridership, Pricing

Denominator: Unit Cost, Speed, Schedule Efficiency

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Service Categories: Regional

Regional All-Day High Capacity
- All-day backbone service
- BART, Caltrain
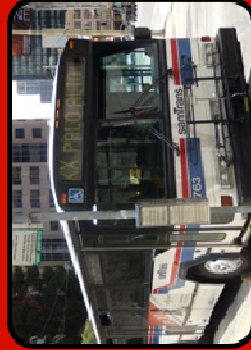
Regional All-day
- Fills in/supplements all-day regional service

Regional Commute
- Peak-only, peak direction regional service

Service Categories: Subregional
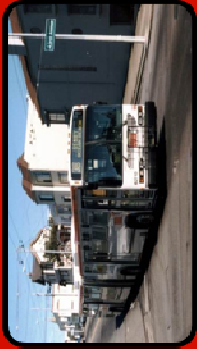
Urban Trunk
- All-day backbone service on higher-density arterials

Subregional Commute
- Peak-only express-type services within county
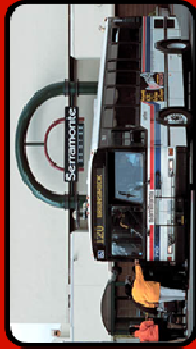
Local Network
- Moderate-density arterials mainly served by local bus
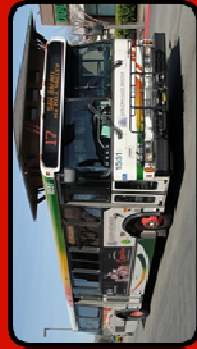
Community Bus
- Local circulation often within lower-density areas

Data Collection Methodology

- Route-level performance and operating data collected directly from agency staff

- Some sample-level data collected from smaller agencies

- Ongoing communication to refine data values/service categorization
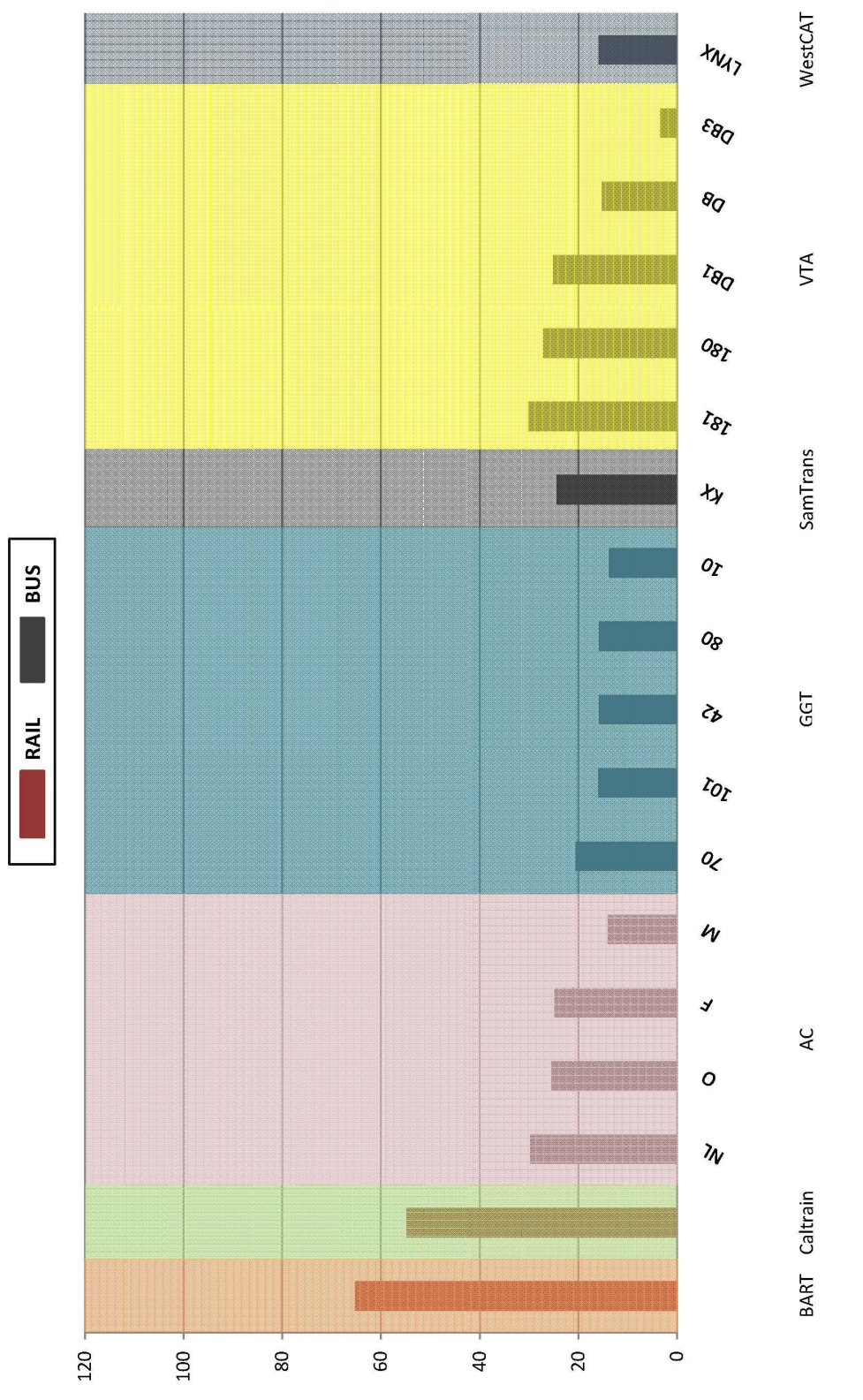
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Additional Metrics

- Ongoing monitoring of several metrics to provide detailed/complementary information

- Operating speed

- Cost per service hour, vehicle mile, seat mile

- Passenger miles per route mile

- Subsidy per passenger and passenger mile

- Capacity utilization (i.e. passenger miles per seat mile)

- Mode share (overall measure)

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Productivity: Regional High Capacity/All Day

Weekday Passenger Boardings per Revenue Hour
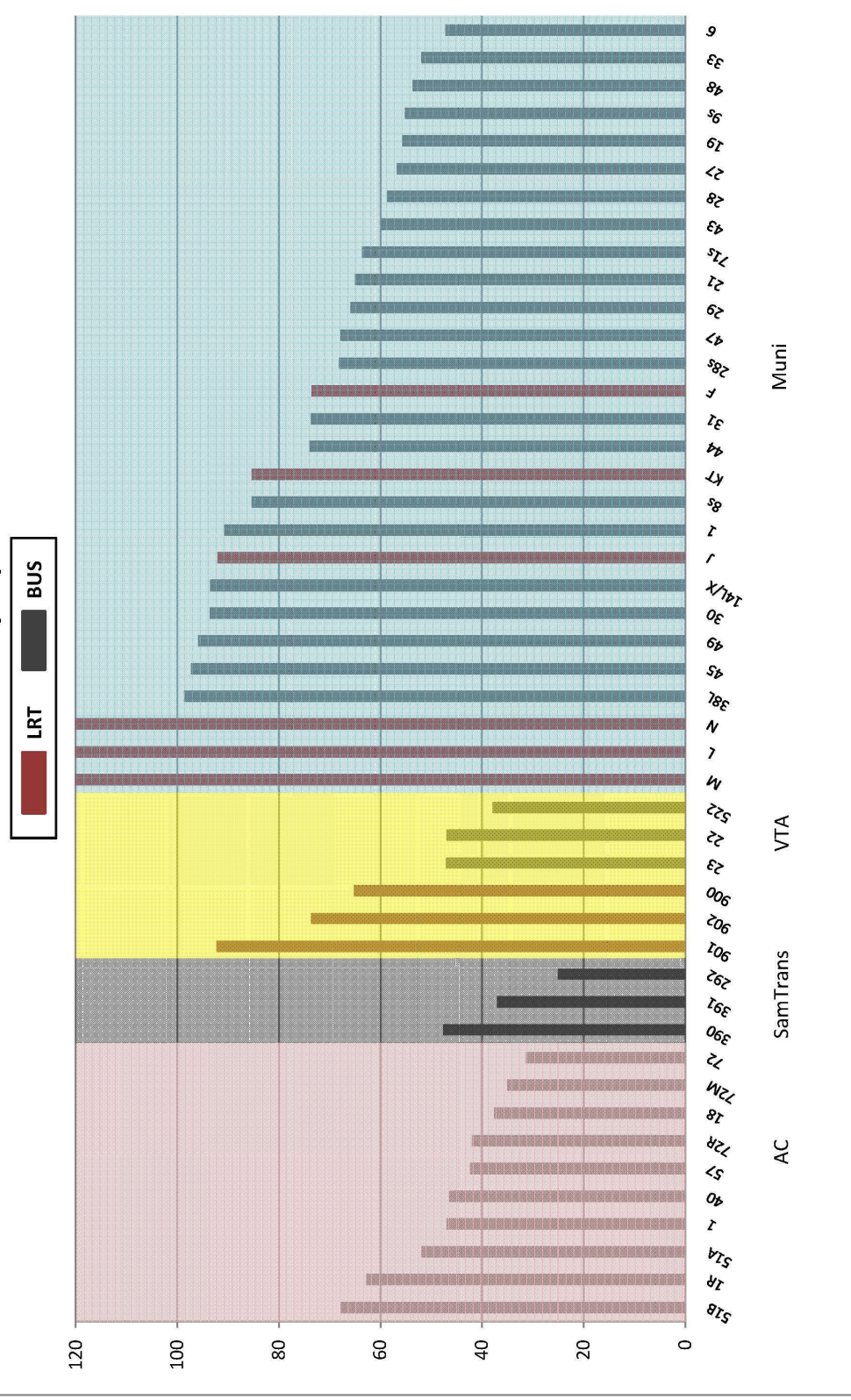**Regional High Capacity/All Day (RAD)**

Productivity: Regional Commute

Weekday Passenger Boardings per Revenue Hour
Regional Commute (RC)
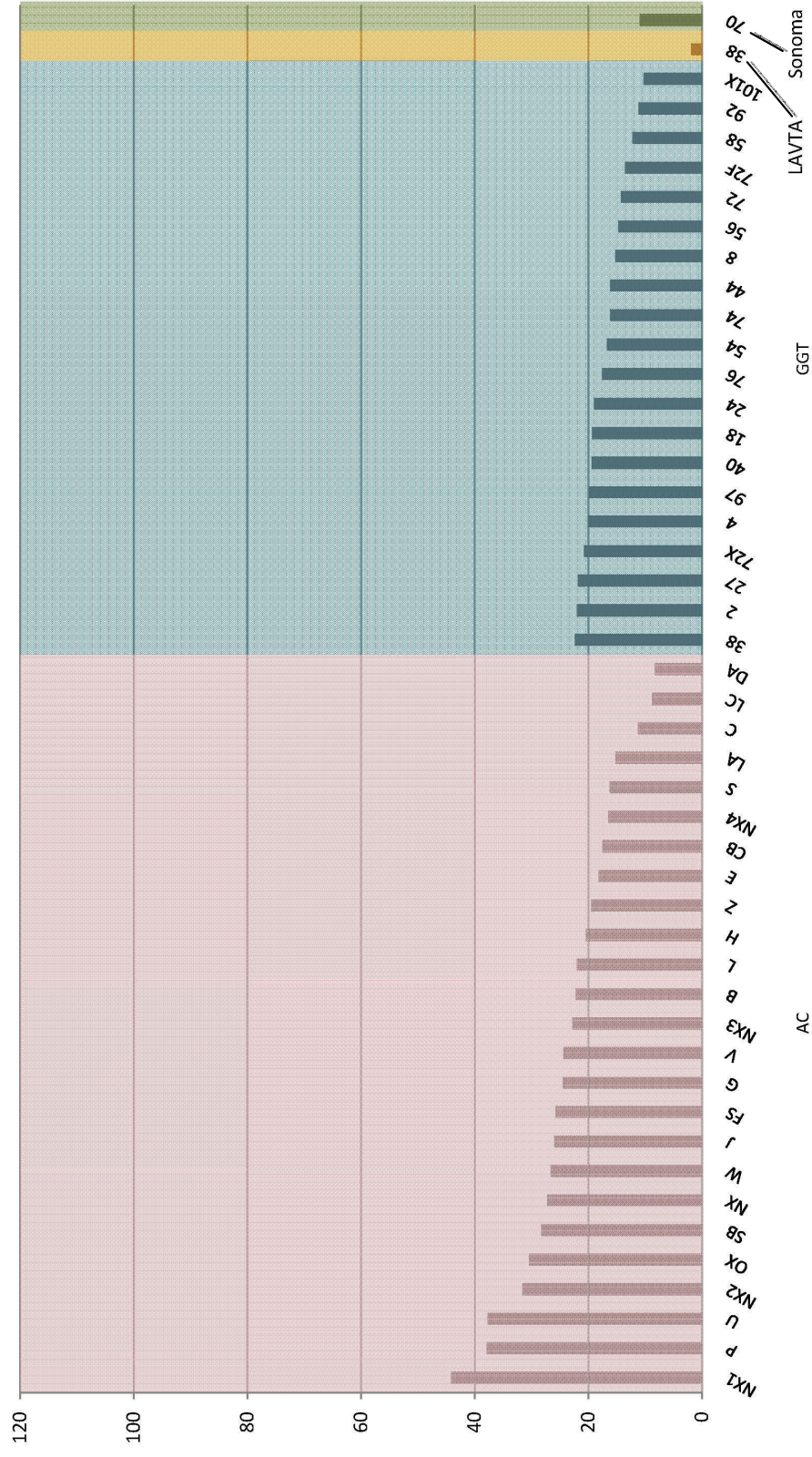
Productivity: Urban Trunk
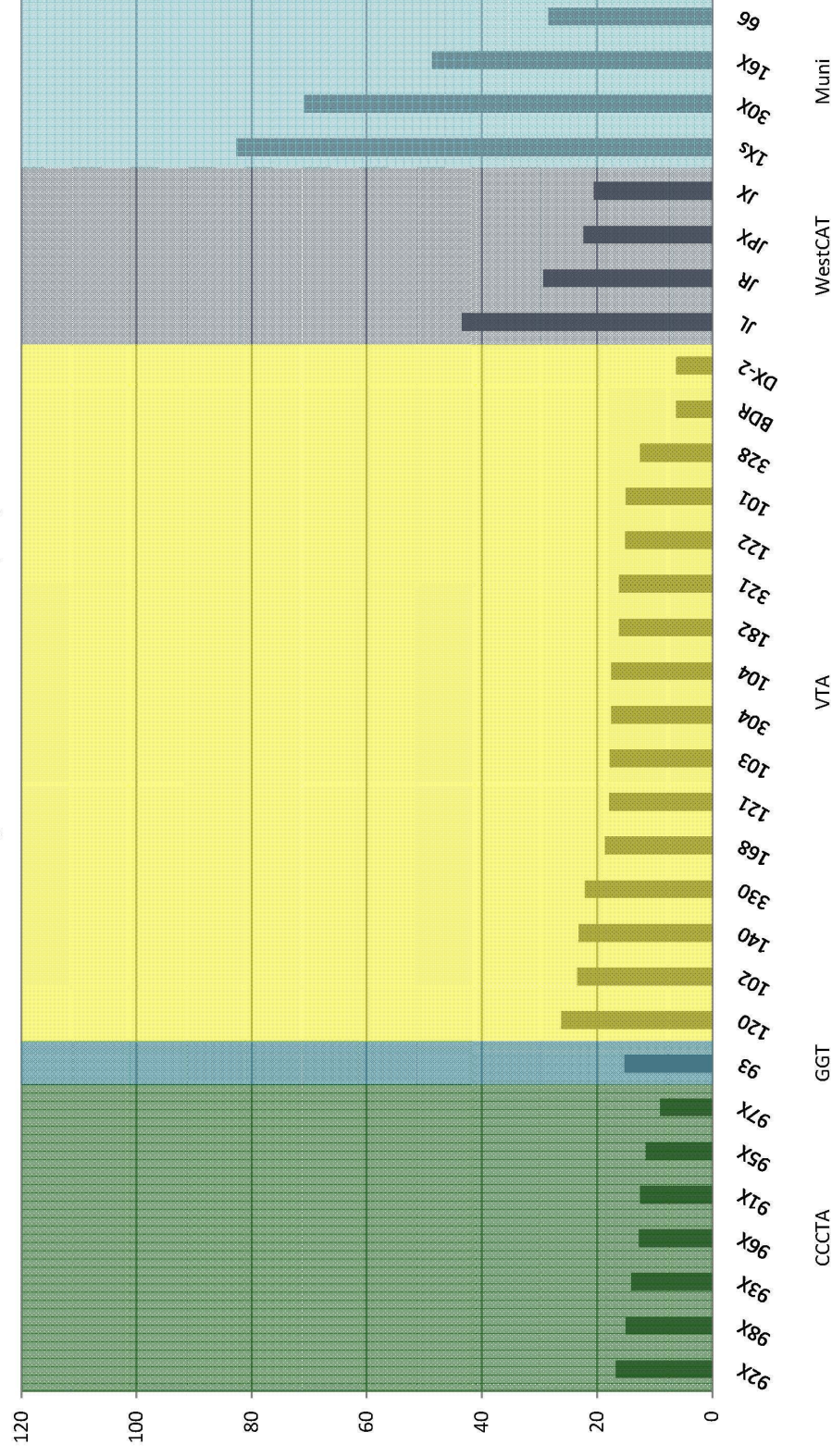

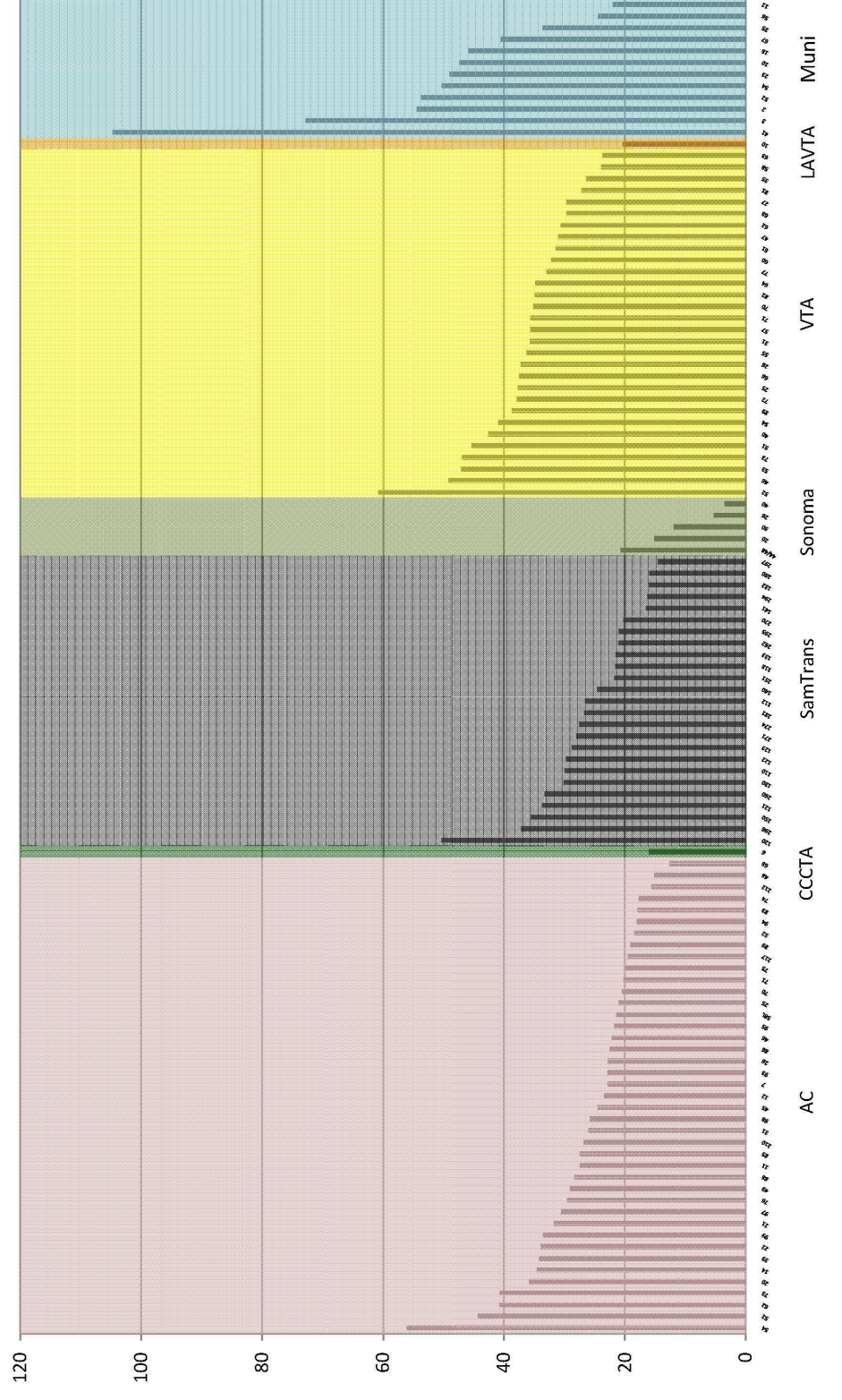**Weekday Passenger Boardings per Revenue Hour**
Urban Trunk (UT)

LRT | BUS

Productivity: Subregional Commute

**Weekday Passenger Boardings per Revenue Hour
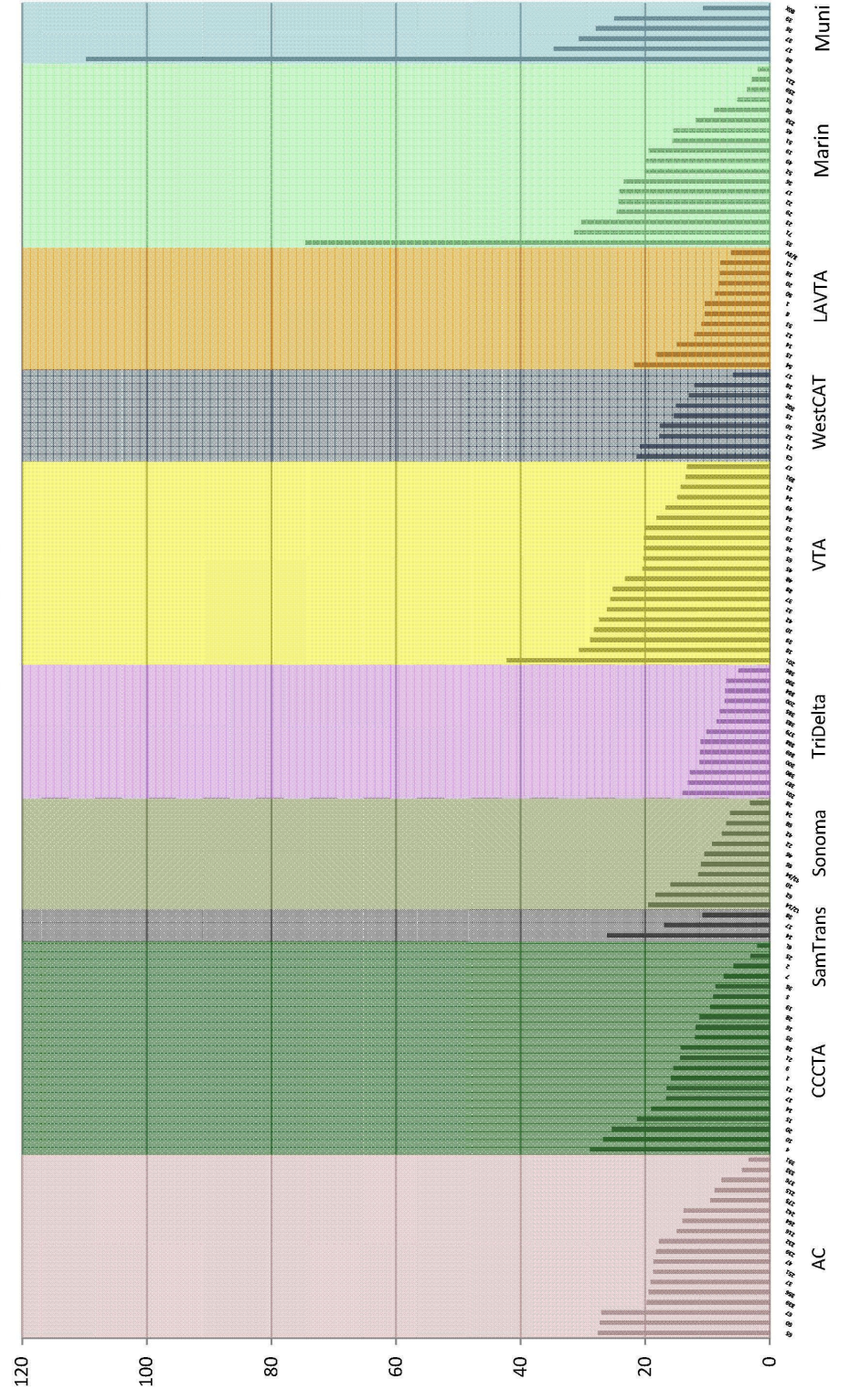Subregional Commute (SC)**

Productivity: Local Network

Weekday Passenger Boardings per Revenue Hour
Local Network (LN)

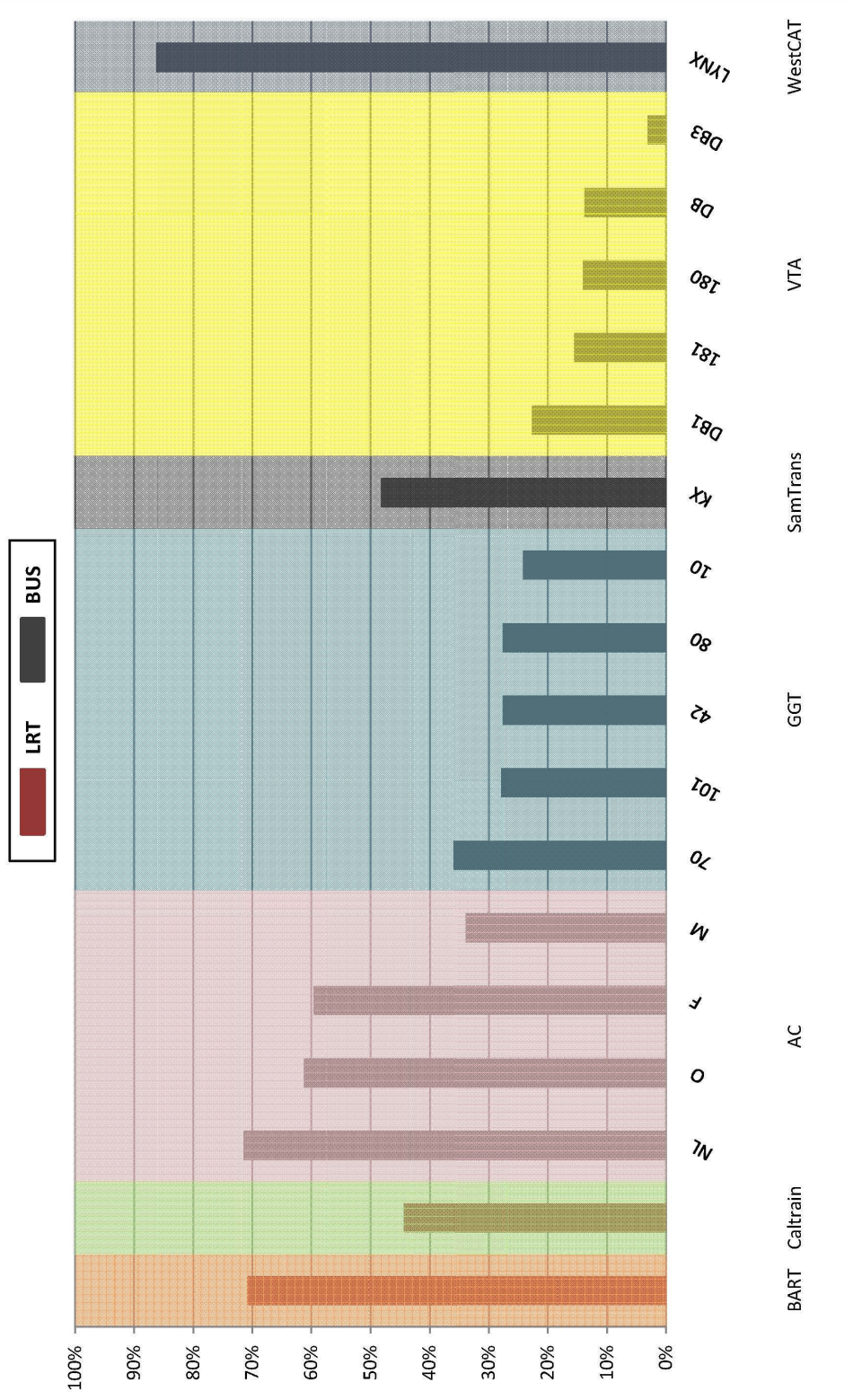# Productivity: Community Bus

**Weekday Passenger Boardings per Revenue Hour
Community Bus (CB)**

Farebox Recovery: Regional High Capacity/ All Day

Weekday Farebox Recovery
Regional High Capacity/All Day (RAD)

Legend: LRT, BUS

Farebox Recovery: Regional Commute

**Weekday Farebox Recovery
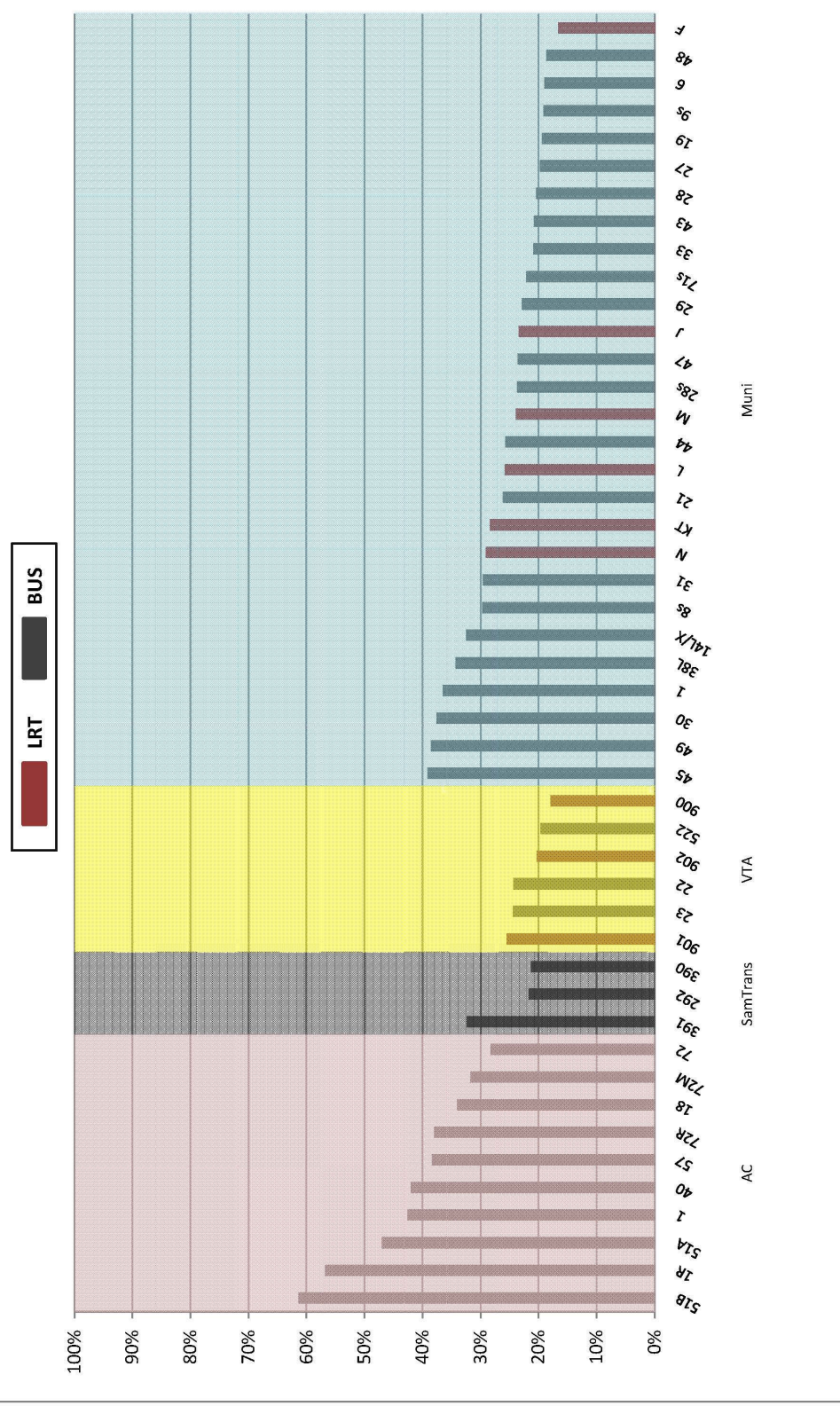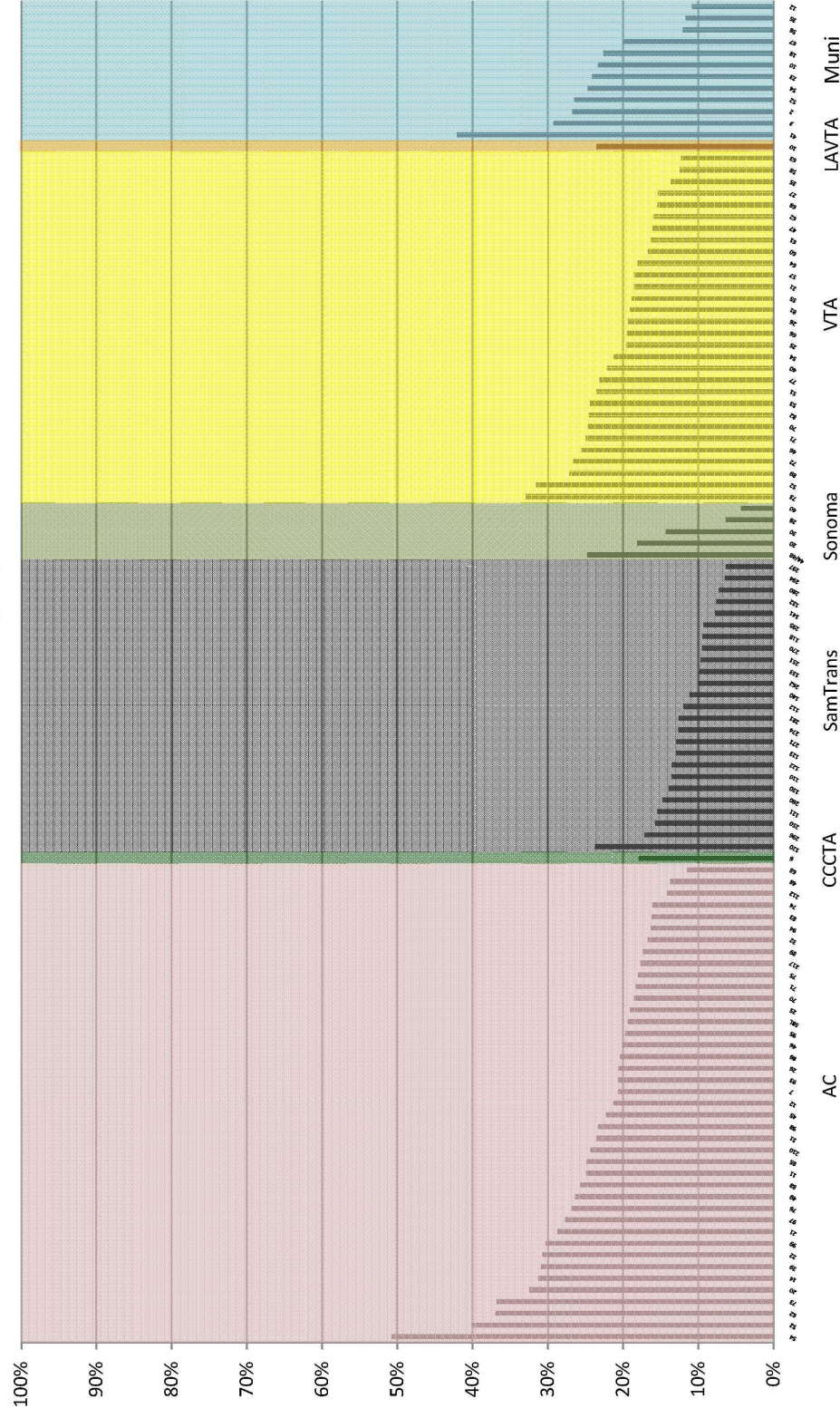Regional Commmute (RC)**
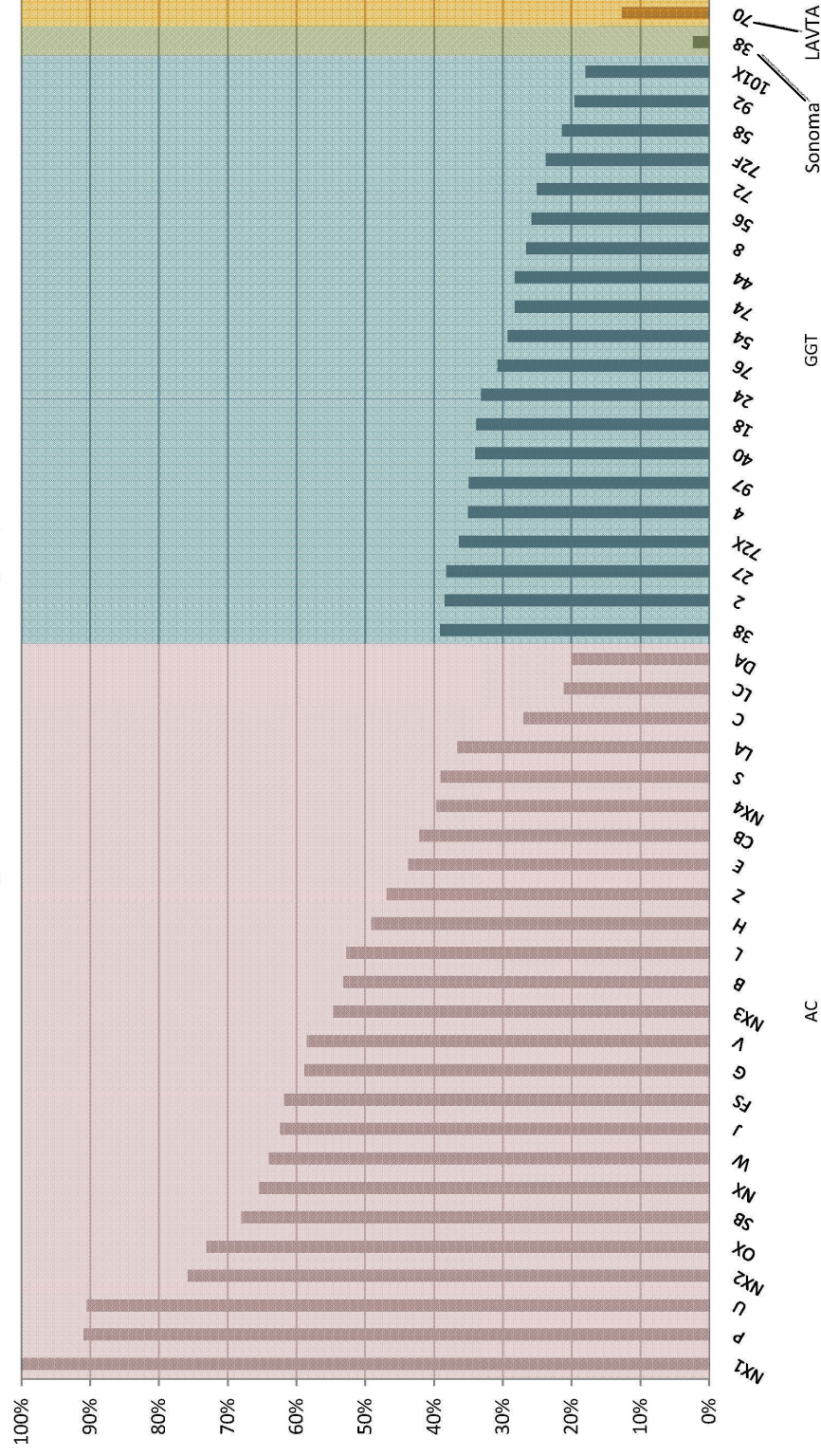
Farebox Recovery: Urban Trunk

Farebox Recovery: Subregional Commute

**Weekday Farebox Recovery
Subregional Commute (SC)**
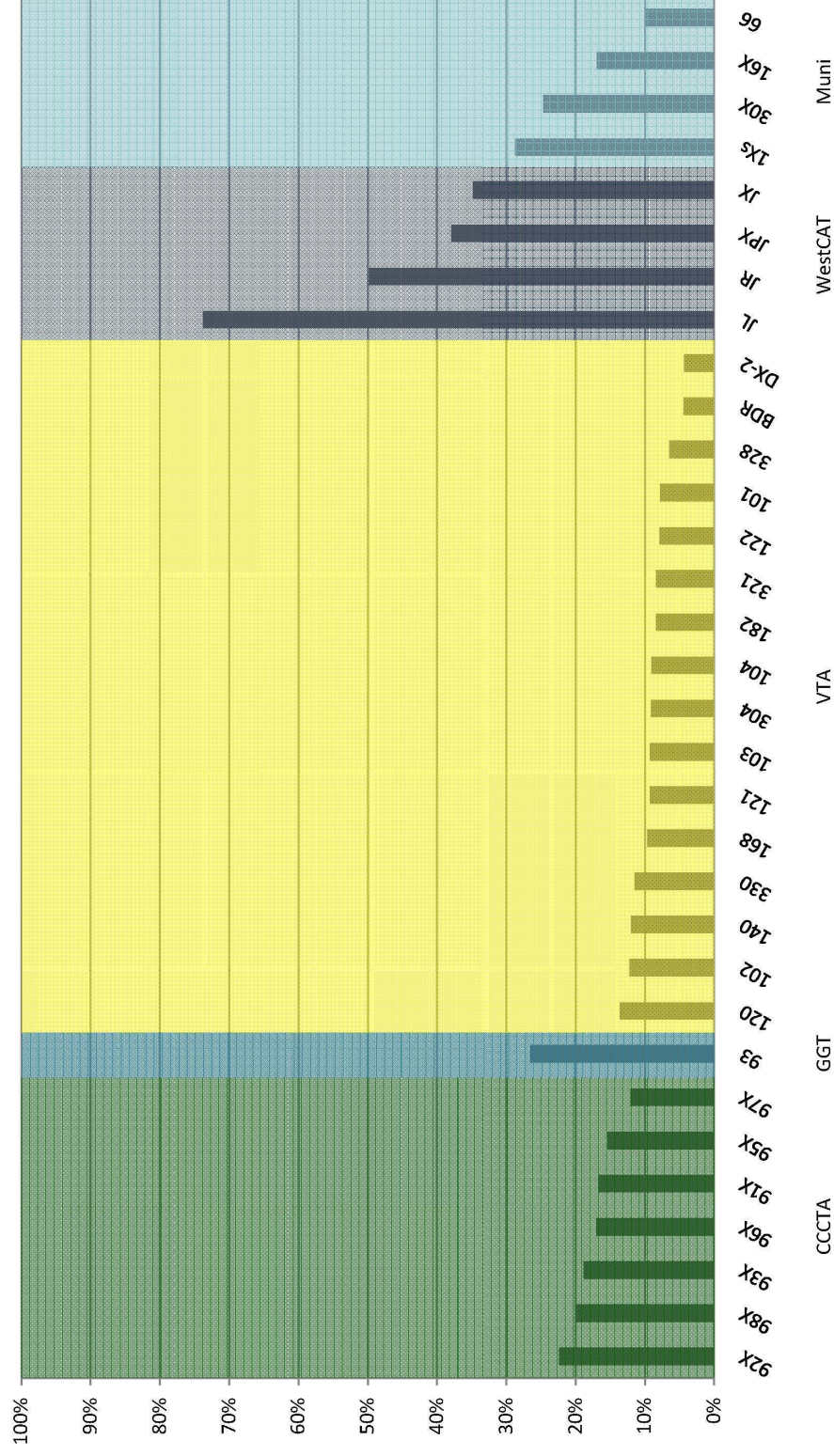
Farebox Recovery: Local Network

**Weekday Farebox Recovery
Local Network (LN)**

Farebox Recovery: Community Bus

Weekday Farebox Recovery Community Bus (CB)
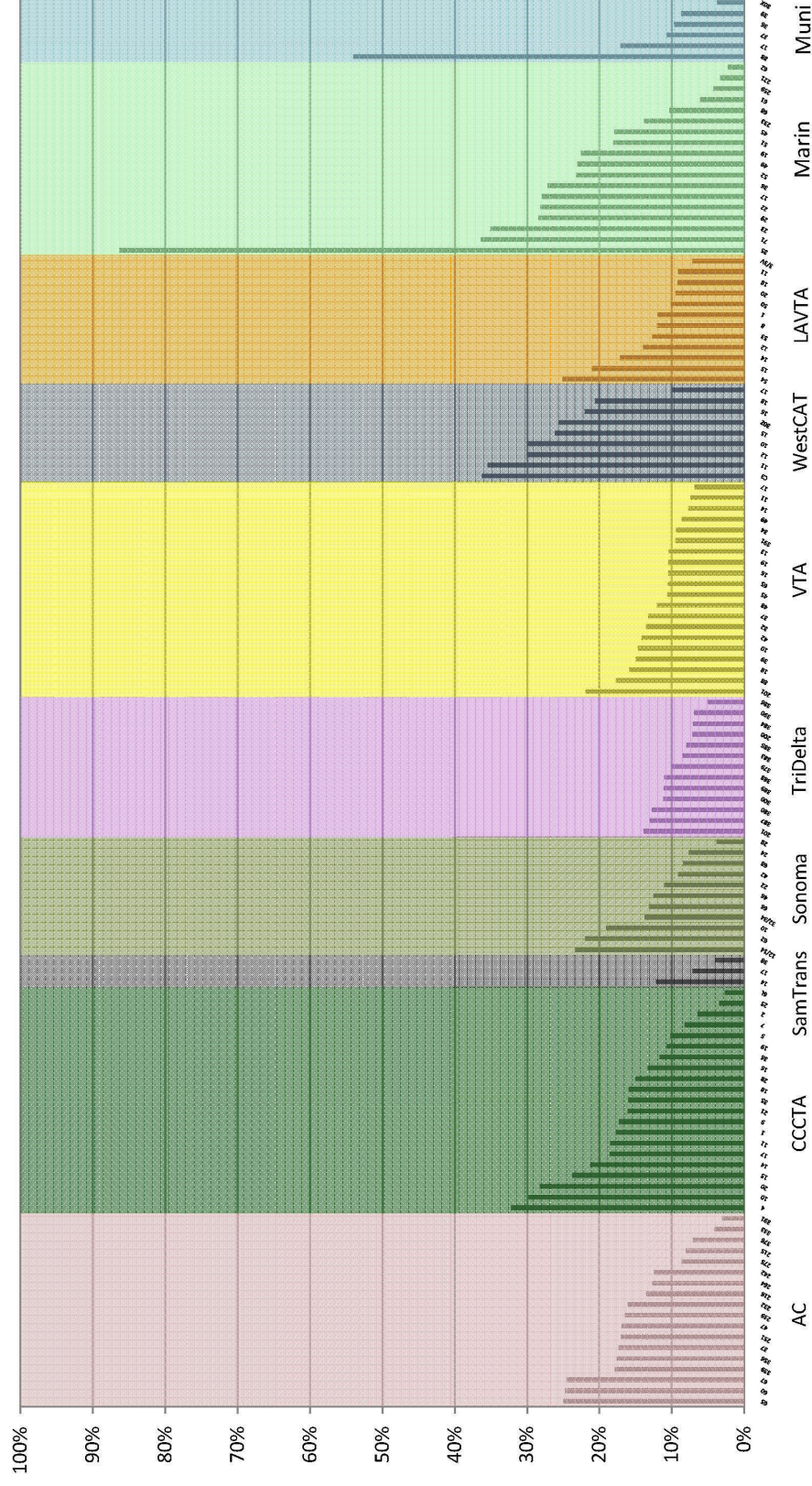
Recent Changes in Speed

Change in Average Speed (1997 - 2008)
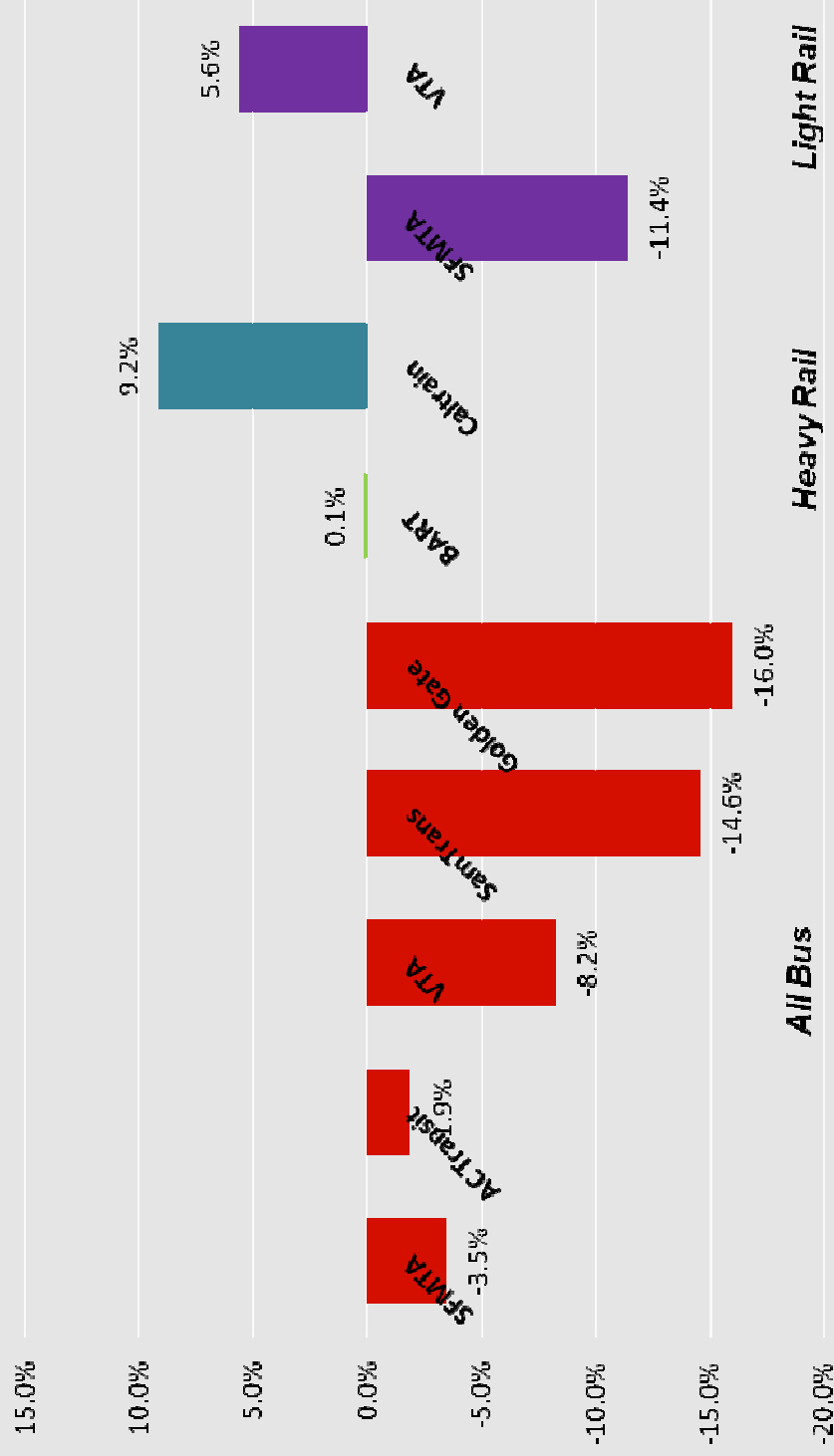
Service Category Comparisons

	Total Ridership	Total Cost	Total Revenue	Average Revenue Speed (mph)
REGIONAL	**28%**	**35%**	**59%**	**32**
Regional High Capacity	26%	30%	55%	35
Regional All Day	1%	3%	3%	18
Regional Commute	1%	2%	1%	18
SUBREGIONAL	**72%**	**65%**	**41%**	**10**
Urban Trunk	53%	37%	27%	9
Subregional Commute	2%	1%	1%	17
Local Network	13%	19%	9%	11
Community Bus	3%	7%	3%	12
School Services	1%	1%	1%	10

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Initial Observations

- Regional high capacity services contribute much more revenue compared to ridership and cost.

- Urban trunk routes contribute much more ridership than they consume in terms of cost, so they are highly productive. They are, however, heavily subsidized since their fare revenue contribution is low.

- Local network routes consume more resources than they contribute in terms of ridership and revenue.

- Urban trunk routes are very slow. Since this type of service carried the bulk of ridership, speeding them up would provide huge gains in productivity.

Next Steps

- Discussion of appropriate regional metrics to use for ongoing performance monitoring

- Possible performance monitoring process

- Do we want to establish targets or improvement goals over time?

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BayArea Plan

Transit Sustainability Project
Steering Committee
June 20, 2011

SB 375 Requirements

- **Reduce greenhouse gas emissions from cars and trucks in the Bay Area by 15% per capita by 2035**

- **House the region's population at all income levels**

- **Use realistic demographic and revenue assumptions**

- **Align transportation investments, housing growth, and land use planning**

- **Adopt in early 2013 by ABAG and MTC**

BayArea Plan
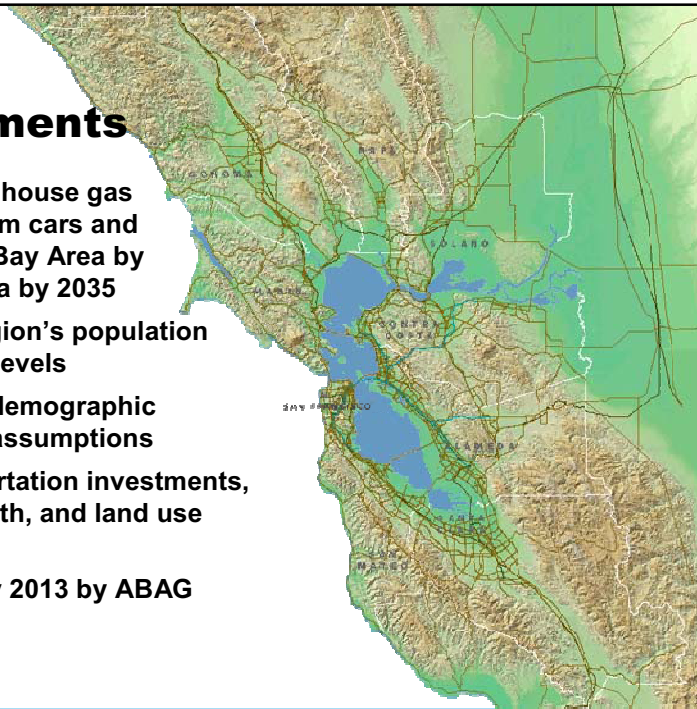
GHG Targets

(% per capita reduction compared to 2005)

Horizon Year	ARB Target	Current Regional Plans	Initial Vision Scenario
2020	-7%	-9%	-11%
2035	-15%	-10%	-12%

Plan BayArea

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Initial Vision Scenario:
Building on an Existing Framework

- Local-regional partnership to support sustainable growth and protect natural resources

- A sustainable regional growth pattern supported by policies and incentives

- Incorporates local input on places and policies for sustainable growth via locally-selected Priority Development Areas (PDAs)

Plan BayArea

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Priority Development Areas

- At least 100 acres
- Within an existing community
- Near high-level transit
- Planned for more housing.
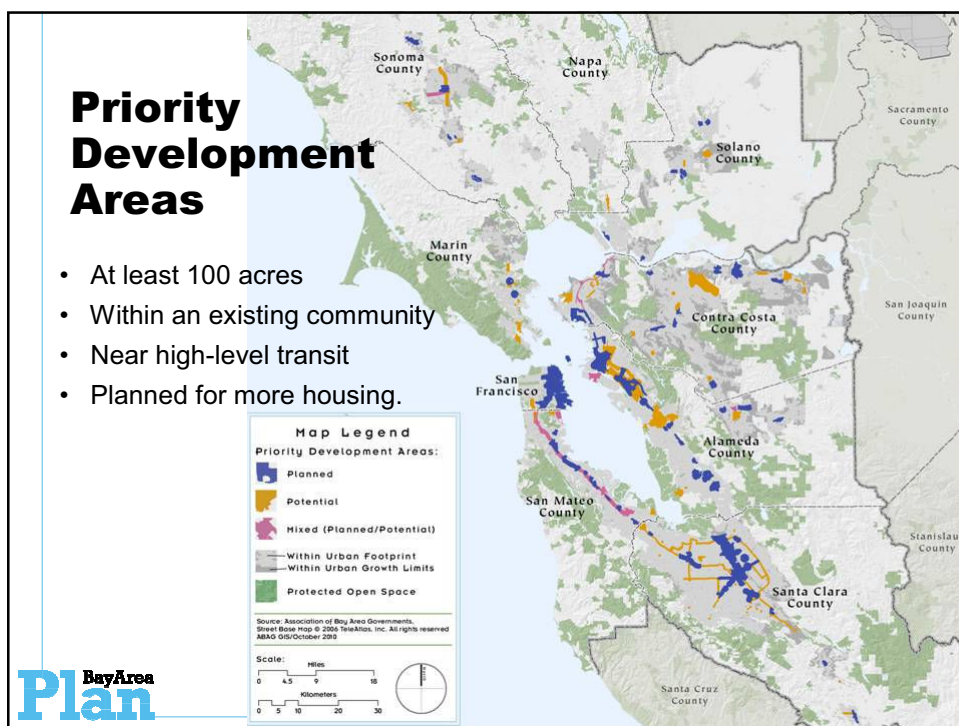
Regional Growth Overview

Scenario	Households	Population	Employed Residents	Jobs
2010	2,669,800	7,348,300	3,152,400	3,271,300
2035 Current Regional Plans	+633,500	+1,717,900	+881,600	+1,129,100
2035 Growth Increment	+269,000	+363,700	+165,000	+92,900
2035 Initial Vision Scenario	+902,500	+2,081,600	+1,046,600	+1,222,000
Total 2035 Initial Vision Scenario	3,572,300	9,429,900	4,199,000	4,493,300

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Housing Distribution

- 70% of growth in PDAs and Growth Opportunity Areas
- 97% of growth within the existing urban footprint
- Preserves character of existing residential neighborhoods
- Utilizes existing transit; strengthens planned transit
- Provides for rapid growth in senior population
- Lower per capita water use due to growth location, development type

Employment Distribution

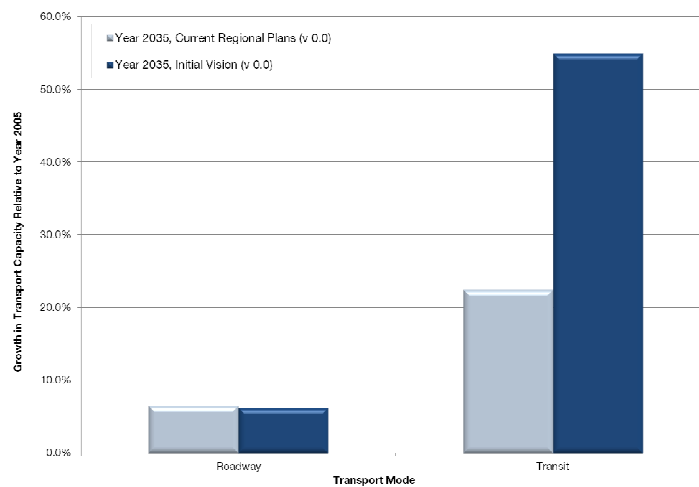| COUNTY	2010 Jobs	2035 Jobs	2010-2035 Growth	2010-2035 Growth Rate
Alameda	675,600	925,400	249,900	37%
Contra Costa	345,900	479,400	133,400	39%
Marin	129,700	151,100	21,400	17%
Napa	70,100	88,800	18,700	27%
San Francisco	544,800	713,700	168,900	31%
San Mateo	330,100	452,200	122,100	37%
Santa Clara	858,400	1,238,400	380,000	44%
Solano	126,300	176,700	50,400	40%
Sonoma	190,400	267,600	77,200	41%
TOTAL	3,271,300	4,493,300	1,222,000	37%

Initial Vision Scenario
Transportation Network

- **Transportation 2035 is base network with Express Lane Backbone system**

- **Improvement to existing transit services adjacent to Initial Vision growth areas**

- **Increased frequencies on over 70 local bus routes and several express bus routes**

- **Increased frequencies on BART, eBART, Caltrain, Muni Metro, VTA Light Rail, and ACE**

- **60 miles of dedicated bus lanes in San Francisco and Santa Clara counties**

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Growth in Transportation Capacity From Year 2005

Legend:
- Year 2035, Current Regional Plans (v 0.0)
- Year 2035, Initial Vision (v 0.0)

Y-axis: Growth in Transport Capacity Relative to Year 2005 (0.0% to 60.0%)

X-axis: Transport Mode — Roadway, Transit

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SCS/RTP Performance Targets

1	Reduce CO2 emissions from cars and light trucks by 15%
2	House 100% housing growth by all income segments, without displacing current low-income residents
3	Reduce premature deaths from PM exposure 10%
4	Reduce injuries and fatalities from collisions by 50%
5	Increase walking and biking 60%
6	Direct development within urban footprint
7	Decrease H+T costs 10% for low-income households
8	Increase GRP by 90%
9	Decrease average per-trip travel time by 10% for non-auto modes Decrease automobile vehicle miles traveled per capita by 10%
10	Maintain the transportation system in a state of good repair: - Reduce average transit asset age to 50% of useful life

Plan

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Initial Vision Scenario:
Lessons Learned

- **The Initial Vision Scenario builds upon the considerable focused growth planning that has already occurred in the region**

- **Accommodating future housing demand requires significant new resources and a supportive transit network**

- **While the IVS meets the 2020 GHG target, it does not meet the 2035 GHG target nor several other targets**

- **Achieving the targets will require additional land-use, transportation and non-infrastructure strategies**

- **Employment location, and its relationship to housing and transit, is a key issue requiring further analysis**

BayArea
Plan

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Outreach to Local Jurisdictions:
What Have We Heard?

- **Accommodating all demand for housing regionally and locally will be a big challenge (particularly given market conditions)**

- **Placement of housing and jobs appears too aggressive in some areas, while growth potential in other PDAs is underutilized**

- **Difficult for many jurisdictions to even plan for future growth given staff resources**

- **Substantial focused growth planning completed but inadequate capital resources to support development**

- **Need to consider jobs/housing balance-fit**

- **Need to develop an economic development strategy**

Plan BayArea

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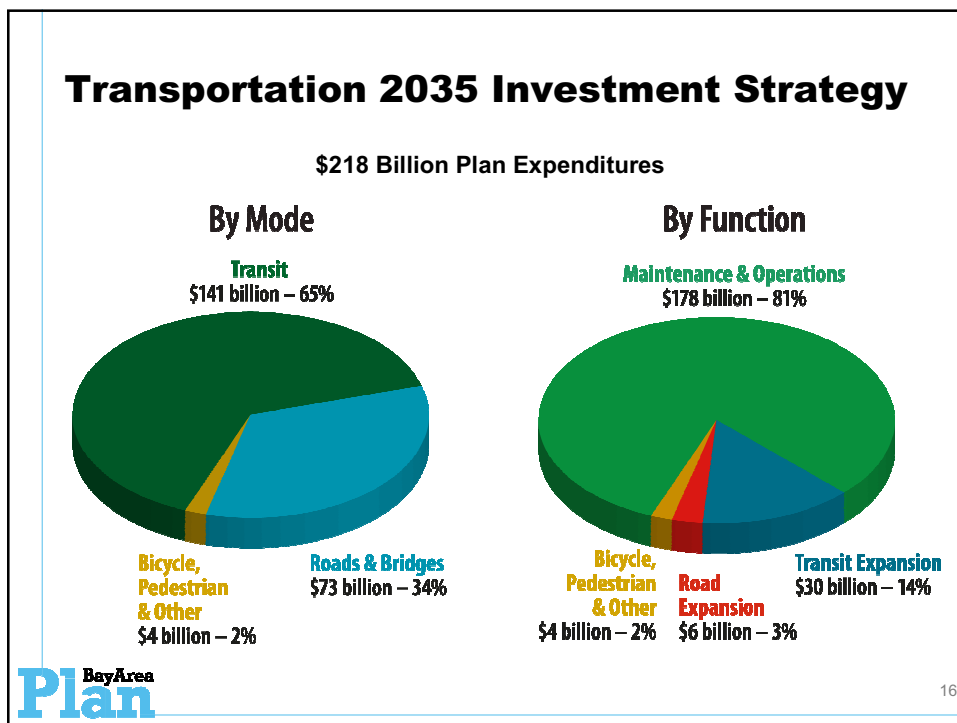
Alternative Scenarios Framework

- Each scenario will attempt to achieve performance targets

- Scenarios will take into account constraints on housing production, infrastructure funding, and transportation resources

- Each scenario will show distinctly different combinations of land use growth patterns, transportation investments, and supportive policies

- Land use growth patterns entail distribution and intensity of jobs, population and housing to reduce auto trip lengths and improve proximity to transit network

- Scenarios will be assessed against social equity measures

- Alternative scenarios will be analyzed to create a preferred scenario that best meets the region's goals and complies with SB 375 and metropolitan planning regulations

Plan BayArea

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Land Use Option

① Initial Vision Scenario (evaluation completed)	② Core Concentration	③ Locally Defined Development Pattern	④ Constrained Core Concentration	⑤ Outer Bay Area Growth
• 70% of housing growth allocated in Priority Development Areas (PDAs) and Growth Opportunity Areas informed through consultation with local jurisdictions • Employment allocated based on regional forecast	• Redistributes both the housing and job growth from Current Regional Plans and Initial Vision Scenario • Housing and job growth will be shifted toward higher density in the urban core and centers where GHG can be reduced most effectively • While growth will be distributed to Priority Development Areas (PDAs), some PDAs have greater potential to reduce GHG than others.	• Local governments suggest revisions to the Initial Vision Scenario that reflect the level and distribution of housing and job growth that they deem feasible for their own jurisdictions.	Same as Core Concentration except: • Constraints that impede housing target identified in #3 will be considered.	• Most housing and job growth is assumed to remain in urban core. However, outer parts of region assumed faster growth than other scenarios. • Housing and job growth in the Outer Bay Areas are assumed to locate within established urban growth boundaries
• Housing target met* but not GHG target	• Will meet housing target	• Housing target may not be met	• Housing target may not be met	• Housing target may not be met

*SB 375 requires an analysis of how the region can house all its population across all economic segments.

BayArea Plan

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Transportation 2035 Investment Strategy

$218 Billion Plan Expenditures

By Mode

Transit
$141 billion – 65%

Bicycle, Pedestrian & Other
$4 billion – 2%

Roads & Bridges
$73 billion – 34%

By Function

Maintenance & Operations
$178 billion – 81%

Bicycle, Pedestrian & Other
$4 billion – 2%

Road Expansion
$6 billion – 3%

Transit Expansion
$30 billion – 14%

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Transportation Options

①②③ T2035 Network	**④ Core Transit Capacity Network**	**⑤ Expanded Network**
• Keep "fix-it first" maintenance levels at about the same as Transportation 2035 (T2035) (i.e., 80 percent of available funding directed to maintenance) • Allocate funding to roadways and transit improvements at levels similar to those in T2035 (i.e., 14 percent to transit expansion and 3 percent to roadway expansion) • Allocate funding to support bike improvements at level similar to those in T2035 (i.e., 2 percent)	• Increase "fix-it first" maintenance levels from T2035 (i.e., assume about 85 percent to maintenance) • Allocate **more** funding towards transit core capacity improvements in the urban core – improving commuter rail, express bus, bus rapid transit • Allocate **more** funding towards roadway improvements in the urban core – Backbone Express Lane Network and FPI • Prioritize bike funding for improvements in the urban core	• Decrease "fix-it first" maintenance levels from Transportation 2035 (i.e., assume about 70 percent to maintenance) • Allocate **more** funding towards roadway improvements – full Express Lane Network and FPI buildout. • Allocate **more** funding towards transit improvements – include trunk-line transit expansions beyond Resolution 3434 • Prioritize bike funding to support suburban improvements

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Policy Initiatives*

- **Transportation Demand Management**
  (telework, commuter benefits, ridesharing services, etc.)

- **Parking Pricing** (e.g., higher parking during peak hours, charge for employer parking)

- **Climate Initiatives**
  - Eco-Driving (driver education on how to drive to save fuels and reduce emissions)
  - Electric Vehicles (beyond what's assumed by Air Resources Board)
  - Safe Routes to Schools

- **Other Strategies**
  - Scale-up above strategies to enable target achievement
  - Identify other GHG strategies

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*Note: All policy initiatives will be deployed at a scale appropriate for each scenario so as to reduce GHG emissions.
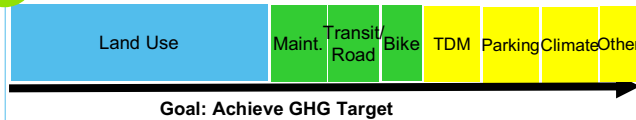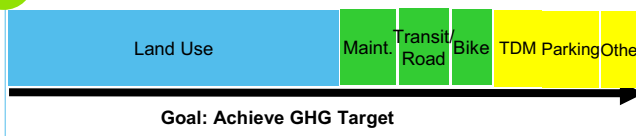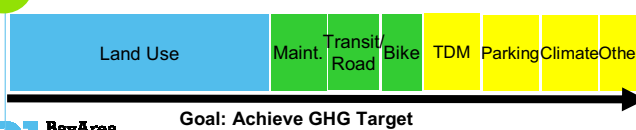
Alternative Scenario Timeline

Develop alternative scenarios through an iterative process	Now – June 2011
Present conceptual alternative scenarios for review and approval by MTC and ABAG	June 2011
Start alternative scenarios analysis	July 2011
Release alternative scenarios results	October 2011
Seek public review and comment on alternative scenarios results	October 2011
Release preferred land use scenario to conform with RHNA schedule	November 2011
Review preferred scenario with MTC and ABAG	January 2012
Approval of preferred scenario by MTC and ABAG	February 2012

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